

## **Patient information and compliance in cardiovascular disease**

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## Abstract:

**Background:** statins are frequently used prophylactic in CHD, however adherence is suboptimal. We expect that comprehensive information will increase adherence in patients.

**Aims:** to examine if different types of prognostic information associated with prescription of a certain drug by physicians can influence patients to take the drug as recommended, and to investigate whether patients want this type of information.

**Methods:** A survey was performed in 313 patients diagnosed with CVD. Patients were presented to three facts with relative risk reduction and absolute risk reduction figures associated with the use of the drug and self-estimated likelihood of taking the drug as prescribed was registered after each given fact.

**Results:** Self-estimated likelihood of taking the drug as prescribed was highest when the cardiologist recommended the drug without presenting absolute and relative risk reduction figures ( $p < 0.001$ ). Presenting relative risk reduction figures for the patients gave significantly higher self-estimated likelihood to take the drug as prescribed compared to giving the patients absolute risk reduction figures ( $p < 0.001$ ). A vast majority of the patients (84%) wanted to get information about risk reduction associated with the drug treatment.

**Conclusion:** The patients wanted information about the CV risk reduction associated with the prescribed drug; however, the best self-estimated compliance was achieved when the cardiologist recommended the drug without presenting risk reduction figures. Relative risk reduction was associated with a better compliance than absolute risk reduction figures.

**Keywords:** adherence, compliance, information, prevention, statin

## Introduction:

Coronary heart disease is very common worldwide. The treatment of this disease has changed dramatically during the last decade. A more aggressive pharmacological treatment is combined with revascularization of patients. All patients with acute coronary heart disease are now recommended treatment with statins (1-2).

Despite significant increases in use of statins they are still clearly underused. (3-4) This along with evidence of poor adherence and discontinuation rates between 40-60% within the first year of statin therapy (5) contributes to the phenomenon referred to as the “treatment gap” (5-6), which is defined as the gap between treatment recommended and the treatment that actually occurs. (7). This gap is significant and potentially fatal for cardiac patients. Several studies have shown that comprehensive information by physicians significantly improved adherence of statin therapy and decreased the rate of discontinuation. (8-9). Well-informed patients have an increased likelihood of having suggested LDL cholesterol targets (10).

Less is known about how detailed this information should be. Should doctors inform the patients about percentage risk reduction and absolute risk reduction or should they just tell patients that the treatment decreases risk of a new MI? Do patients want this type of detailed information?

The aim of our study was to examine if different types of prognostic information associated with prescription of a certain drug by physicians can influence patients to take the drug as recommended, and to investigate whether patients want this type of information.

## Methods:

To enlighten the aspects mentioned a survey was performed in 313 (134 female, 179 men) consecutive patients admitted to the cardiology unit at the department of medicine, Oslo university hospital Aker. The participants were enrolled in the study by giving written consent after receiving oral and written information. The study was approved by the ethical committee.

All patients were asked 4 survey questions (Figure 1) by two of the authors (FR and MS). A standard questionnaire was used to register the patient's self-estimated likelihood of taking the drug as prescribed, after introducing them to different kinds of standardized information. The questions were based on results from the 4S study (11).

### Statistical Analysis:

Quantitative data are presented as mean  $\pm$  standard deviation. Differences in categorical parameters (survey questions) were assessed using marginal homogeneity test in StatXact 8 (Cytel inc., 2007). All statistical tests were conducted at the 5% significance level.

## Results:

The basal characteristics of the patients are presented in Table 1. All patients had a heart disease and were either hospitalized or visiting the cardiology outpatient unit.

The survey results from question 1-3 given are presented in Figure 2. Most of the patients estimated that they would use the drugs as prescribed (answer alternative 1 or 2) after all three statements; 93% in question 1, 91% in question 2, 83% in question 3.

When comparing the answers from the patients; more patients estimated that they would take the medication as prescribed when presented to the statement related with Q1 compared to statements related with the other questions. (Q1 vs. Q2:  $p = 0.0003$  and Q1 vs. Q3:  $p < 0.0001$ ). The statement linked with Q2 was associated with higher self-estimated adherence compared to that of Q3 (Q2 vs. Q3:  $p < 0.0001$ ).

84% of the patients stated that they wanted information (answer alternative 1 or 2) about the expected effect of the drug to be given at initiation of therapy (Q4). 9% stated “Probably not” and 7% stated “Absolutely not”.

There were no significant differences in the answers to Q1-4 between the genders ( $p > 0.1$ ). There was neither any significant difference between the answers of Q1-3 when comparing younger patients with older patients ( $< 69$  years vs  $\geq 69$  years). Younger patients were more positive to more detailed risk reduction information. In Q4, 80% of the younger patients answered “Yes, absolutely” in contrast to 54% of the older patients ( $p < 0.01$ ).

## Discussion:

Statins have through many studies and randomized trials demonstrated their efficacy in reducing mortality and morbidity in different groups of subjects, therefore they are frequently prescribed drugs for both primary and secondary prevention.

Given the importance of prophylactic treatment with statins, a combination of under prescription and poor compliance is potentially fatal. The drug is only effective if the patient takes it. Information from physicians to patients has shown to enhance adherence. Although it

might be well expected that comprehensive information will give us more compliant patients, less is known about how patients should be informed. How much details from scientific studies should be included in the information? In order to increase adherence; the national cholesterol education program (NCEP) expert panel suggests that one should particularly emphasize the mortality and morbidity benefit of the statin therapy (12). There is also evidence that patients' knowledge about cholesterol and the role of cholesterol modifying strategies should be determined prior to initiation of treatment. (9) Thus, a patient that is convinced of the prophylactic benefits of statins shows enhanced compliance. (13)

Should doctors just prescribe a drug or should they present more underlying documentation of the drug? And in what way should this documentation be described? Should with give absolute reduction figures or percentage reduction figures? And furthermore, do the patients want to know these figures?

Most of the patients in this study reported an overall high self-estimated likelihood of taking drugs as they were prescribed. This indicates that most patients have faith in medicine and follow physicians' recommendation.

The fact that the majority of patients wanted information about the expected outcome of a certain drug to be given at initiation of therapy shows a willingness to understand and participate in issues concerning their own health and well being. In our study a vast majority of the patients answered they would highly appreciate information on expected effects of outcome of the drug they were prescribed. Only 7% answered "Absolutely not" on whether they wanted outcome information about their drug therapy.

The results from this study showed that most of the patients responded better to an easy, understandable concise recommendation as given in fact 1 (Q1). This simple statement achieved a better self-estimated likelihood of taking the drug compared to presenting relative and absolute risk reduction figures for the patients. When presented to relative risk reduction figures, the patients reported a higher likelihood of taking the drug as prescribed than when they were given absolute risk reduction figures (Q2 vs Q3). This seems to be logical since relative risk reduction often appears to be more impressive than absolute risk reduction. Pharmaceutical companies and authors of large intervention studies also seem to prefer presenting positive results with relative risk reductions rather than absolute risk reduction. Some of the documentations in fact two and three were confusing to many of the patients. Especially fact 3 was often difficult to comprehend. The more detailed and complex the facts got the more critical the patients became. We registered 77% answering “Yes, absolutely” after Q1 compared to only 53% on Q3. This implies that specific research data may increase uncertainty rather than assuring the patients of the benefits of the drug prescribed. In this matter the answers from the patients proved to be similar in both genders and in both age groups as well. This was interesting since many of the older patients impulsively mentioned that they did not expect to live another 5 years when answering the questions.

Whether a specific gender or high age is a factor of non-compliance or the opposite remains unclear because different studies have produced conflicting results. One study showed that compliance was lower with high age (14), while another study has found that those who stated to use statins continuously were older than those who stated not (10). Female gender has proven to be an independent factor of non-adherence in a study (15).

However a discrepancy was seen between the answers to the question regarding whether or not the patients wanted information about the expected outcome of the drug to be given at initiation of therapy (Q4). Significantly more of the younger patients wanted this type of information compared to the older group.

We do believe the patients are representative for patients seen at a hospital based cardiology unit. From our study we can conclude that relative reduction figures gave higher self-estimated likelihood of taking drugs as prescribed compared to the absolute risk reduction figures. It seemed as specific research data increased uncertainty rather than assuring the patients of the benefits of the drug prescribed. Therefore it might be appropriate to say that physicians that strive to increase adherence, should present the patients to easy, comprehensive reduction figures opposed to more detailed and complex reduction figures. This was supported by the fact that the highest self-estimated likelihood for taking the drug was achieved after a distinct recommendation from the cardiologist.

An expected bias in our study may be that the self-estimated likelihood of adherence very well may differ from the actual adherence in patients. The compliance rate may be overestimated when this method is used. Furthermore the authors were frequently asked questions about the reputes of the physician prescribing the drugs, possible side-effects, alternatives to the drug and the need and reason behind getting it prescribed. These are all factors that are liable of influencing the adherence, but our study does not take these factors in consideration.

We conclude that most patients in a cardiology unit want detailed information about the expected outcome associated with a certain drug. However, most of the patients reported a



higher self-estimated likelihood of taking the drug as prescribed with an easy, understandable concise recommendation compared to providing them with relative and absolute risk reductions figures.

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**Table 1: Patient characteristics (n=313)**

<b>Gender</b>	
Female (n=134)	43%
Male (n=179)	57%
<b>Age (years)</b>	69±14
<b>Main Diagnosis</b>	
AMI (n=109)	35%
Heart Failure (n=44)	14%
Arrhythmia (n=96)	31%
Angina (n=32)	10%
Valvular Defect (n=32)	10%
<b>BP (mm Hg)</b>	
Systolic BP	139±21
Diastolic BP	79±13
<b>Heart Rate (BPM)</b>	76±21
<b>S-chol (mmol/l)</b>	4,4±1,3

## Figure 1:

Questionnaire:

*Introduction:*

*A study on the effects of statins as prophylactic treatment for CHD gives the following information:*

*Fact 1: Your cardiologist recommends this medication, which reduces the risk of AMI.*

Q1: Will this information lead you to use the medication as prescribed?

*Fact 2: Within a period of 5 years; this medication reduces the risk of death caused by heart disease by 42% and the risk of AMI by 34%.*

Q2: Will this information lead you to use the medication as prescribed?

*Fact 3: Without this medication 88% of the patients will still be alive after 5 years. Of those using the medication 91% will survive. The risk of AMI is 20% if one uses the medication, but 29% for those not using the medication.*

Q3: Will this information lead you to use the medication as prescribed?

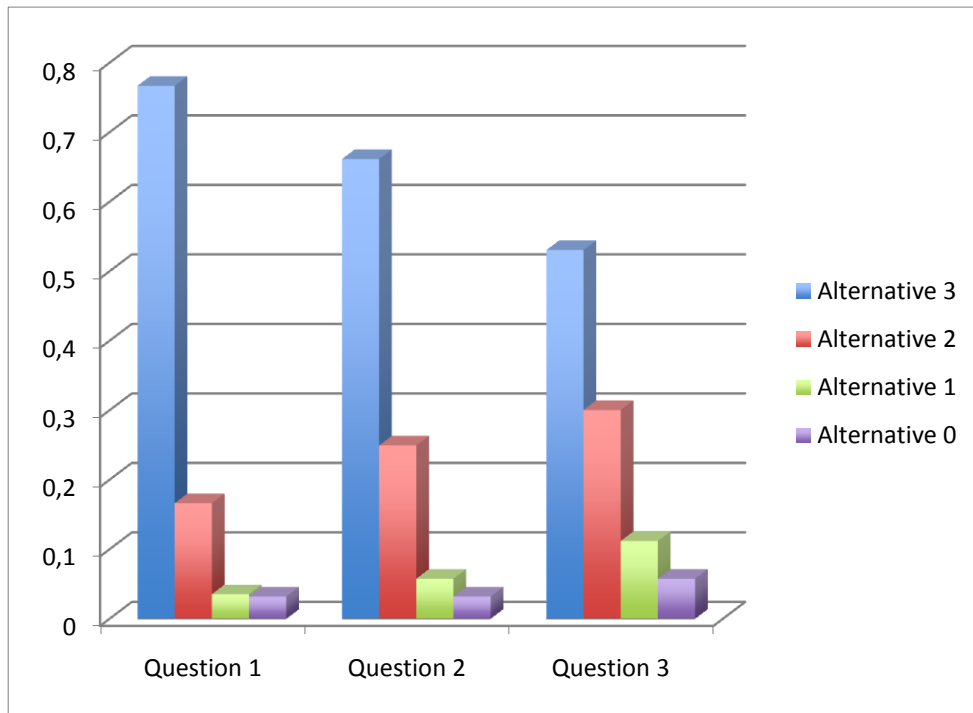
*Should this type of information be given to patients at initiation of treatment?*

Q4: Cross out the answer that fits you best.

All the questions had the following answer alternatives:

1. Yes, absolutely
2. Yes, probably
3. Probably not
4. Absolutely not

Figure 2:



Legends

Survey results from question 1-3